

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 1. (Currently amended): A backup processing method for backing up data to
2 be used by a data-processing computer-system, the method comprising the steps of:
3 selecting resources in a usable state from a plurality of resources necessary for
4 backing up data stored in a disk storage system, the data to be used by the data-processing
5 computer, the selected resources including a first storage unit to store at least some of the data in
6 the disk storage system as backup-data and a second storage unit different from the first storage
7 unit to store at least some of the data in the disk storage system as backup-data-system and stored
8 in a storage system thereof;
9 ~~selecting switches in a usable state from a plurality of switches necessary for~~
10 ~~forming routes among the selected resources;~~
11 ~~determining which of the selected resources and selected routes are secure;~~
12 ~~securing one group of the selected resources and selected routes as a first path~~
13 ~~between the storage system and a first destination and another group of the selected resources~~
14 ~~and selected routes as a second path between the storage system and a second destination~~
15 ~~different from the first destination;~~
16 selecting a first switch from a plurality of switches, the first switch in data
17 communication with the disk storage system and with the first storage unit thereby providing a
18 first path therebetween;
19 selecting a second switch from the plurality of switches which is different from
20 the first switch, the second switch in data communication with the disk storage system and with
21 the second storage unit thereby defining a second path therebetween;
22 executing backup processing by using the first path and a backup instruction
23 command set having a plurality of backup commands, each backup command backing up a
24 different portion of the data from the disk storage system to the first storage unit as backup data,

25 every portion of the data having a corresponding backup command, the backup processing
26 including executing one or more of the backup commands;
27 detecting if a problem occurs in the first path based on a result of execution of one
28 of the backup commands in the backup instruction command set;
29 changing from the first path to the second path if a problem is detected; and
30 continuing execution of the backup processing by using the second path and
31 executing backup commands in the backup instruction command sets that have not yet been
32 executed.

1 2. (Previously presented): A backup processing method according to claim
2 1, wherein backup processing is executed by using the first or the second path, and when the
3 backup processing has been fully executed by one or both of the paths, regarding the backup
4 processing as successful.

3-5. (Canceled)

1 6. (Original): A backup processing method according to claim 2, further
2 including a step of storing information relating to the backup processing of the backed-up data.

1 7. (Original): A backup processing method according to claim 2, further
2 including a step of storing information relating to whether the backup processing of the backed-
3 up data was successfully executed.

1 8. (Original): A backup processing method according to claim 7, wherein
2 data stored relating to the successful execution of the backup processing is used to determine if
3 the data can be restored.

9-15. (Canceled)

1 16. (Previously presented): A backup processing method according to claim 1
2 further comprising terminating execution of the backup processing if the second path is not
3 secured.

1 17. (Currently amended): A computer managing a system which includes a
2 plurality of resources, comprising:
3 a processing unit; and
4 a network interface connectable to the plurality of resources via a network,
5 wherein the processing unit is operable to:
6 select resources in a usable state from the plurality of resources necessary
7 for backing up data stored in a disk storage system;
8 determine which of the selected resources are secure;
9 secure a first group from among the selected resources to define a first
10 path between the disk storage system and a first storage resource;
11 secure a second group from among the selected resources to define a
12 second path between the disk storage system and a second storage resource different from
13 the first storage resource;
14 initiate first backup processing via the first path by issuing a backup
15 instruction command set via the network interface to the first group of resources, the
16 backup instruction command set having a plurality of backup commands, each backup
17 command effective to backup a portion of the data stored in the disk storage system into
18 the first storage resource as first backup data, wherein one or more of the backup
19 commands are executed to backup one or more portions of the data via the first path;
20 detect if a problem occurs in the first path based on a result of execution of
21 one of the backup commands;
22 initiate a change from the first path to the second path if the problem is
23 detected; and
24 initiate second backup processing via the second path by issuing a
25 remaining portion of the backup instruction command set via the network interface to the
26 second group of resources, the remaining portion of the backup instruction command set
27 including those backup commands which had not been previously executed to backup

28 remaining portions of the data stored in the disk storage system into the second storage
29 resource as second backup data.

1 18. (Previously presented): A computer according to claim 17, wherein the
2 processing unit terminates execution of the backup processing if the second path is not secured.

1 19. (Previously presented): A computer according to claim 18, wherein
2 backup processing is executed by using the first path or the second path, and if the backup
3 processing has completely executed using either or both of the first path or the second path, then
4 regarding the backup processing as successful.

1 20. (Previously presented): A computer according to claim 19 further
2 comprising a memory,
3 wherein the processing unit stores information relating to whether the backup
4 processing of the backed-up data was successfully executed,
5 wherein the processing unit indicates to execute data restore based on the
6 information.

1 21. (Previously presented): A computer according to claim 17 further
2 comprising a memory,
3 wherein the data that is backed up is referred to as backed-up data and can be
4 stored in the first storage resource in the first path or in the second storage resource in the second
5 path,
6 wherein the processing unit stores backup information relating to the backup
7 processing of the backed-up data into the memory, the backup information indicating which
8 portions of the backed-up data are stored in the first storage resource and which portions of the
9 backed-up data are stored in the second storage resource,
10 wherein the processing unit initiates restoring of the backed-up data based on the
11 backup information, including performing steps of:

12 accessing the backup information in connection with a first portion of the backed-
13 up data and determining whether the first portion is stored on the first storage resource or on the
14 second storage resource;

15 accessing either the first storage resource or on the second storage resource to
16 obtain the first portion; and

17 repeating the above steps for additional portions of the backed-up data, thereby
18 restoring the data from the backed-up data.

1 22. (Currently amended): A system comprising:
2 a disk storage system;
3 a plurality of ~~library~~ backup disk storage systems;
4 a plurality of copy devices;
5 a plurality of switches which are connectable among the disk storage system, the
6 plurality of ~~library~~ backup disk storage systems and the plurality of copy devices; and
7 a management computer connectable to the plurality of switches, the disk storage
8 system, the plurality of ~~library~~ backup disk storage systems and the plurality of copy devices via
9 a network,

10 wherein the management computer is operative to:
11 select ~~library~~ backup disk storage systems in a usable state from the
12 plurality of ~~library~~ backup disk storage systems necessary for backing up data stored in
13 the disk storage system;
14 select switches in a usable state from the plurality of switches necessary
15 for forming routes from the disk storage system to the selected ~~library~~ backup disk
16 storage systems, thereby securing a first group of selected ~~library~~ backup disk storage
17 systems and selected switches as a first route for backup operations and securing a second
18 group of selected ~~library~~ backup disk storage systems and selected switches as a second
19 route for backup operations;

20 select a first copy device in a usable state from the plurality of copy
21 devices for the first route and a second copy device in a usable state from the plurality of
22 copy devices for the second route; and
23 initiate execution backup processing via the first route by issuing backup
24 instruction command set including a plurality of backup commands, each backup
25 command indicating to transfer part of the data stored in the disk storage system to the
26 first copy device or to the second copy device,
27 wherein the first copy device sends portions of data from the disk storage system
28 ~~to~~as backup data be stored in a first library-backup disk storage system included in the first route
29 in accordance with one or more of the backup commands as backup data, and notifies the
30 management computer if an error in the first route is detected,
31 wherein the management computer initiates execution backup processing via the
32 second route by issuing a remaining portion of the backup instruction command set to the second
33 copy device if the management computer receives an error notification from the first copy
34 device,
35 wherein the second copy device sends data from the disk storage system ~~to~~as
36 backup data to be stored in a second library-backup disk storage system included in the second
37 route in accordance with the remaining portion of the backup instruction command set.

1 23. (Previously presented): A system according to claim 22, wherein the
2 management computer terminates execution of the backup processing if the second route is not
3 secured.

1 24. (Previously presented): A system according to claim 23, wherein backup
2 processing is executed by using the first route or the second route, and when the backup
3 processing has been successfully executed by at least one route, regarding the backup processing
4 as successful.

1 25. (Previously presented): A system according to claim 24,
2 wherein the management computer stores information relating to whether the
3 backup processing of the backed-up data was successfully executed,
4 wherein the management computer selects the first route based on the
5 information, indicates the copy device to execute data restore from a library system included in
6 the first route to the storage system via the first route.